FAU

FLORIDA ATLANTIC UNIVERSITY

NEW/CHANGE PROGRAM REQUEST
Graduate Programs

Department Ocean & Mechanical Engineering

College Engineering and Computer Science

UGPC Approval _____
UFS Approval _____
Banner Posted _____
Catalog _____

Program Name

Graduate programs in Ocean Engineering and Mechanical Engineering

☐ **New Program**

☑ **Change Program**

Effective Date
(TERM & YEAR)

Fall 2019

Please explain the requested change(s) and offer rationale below or on an attachment

This proposal is to update the language regarding the Plan of Study requirement. The current language refers to a paper form that is no longer used. The new language directs the students to log into myfau.fau.edu and then use MyPOS to fill the Plan of study.

Faculty Contact/Email/Phone

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Consult and list departments that may be affected by the change(s) and attach documentation

This change does not affect any other Department.

Approved by	***Date***
Department Chair	Feb 11, 2019
College Curriculum Chair	2/11/19
College Dean	2/11/2019
UGPC Chair	
UGC Chair	
Graduate College Dean	
UFS President	
Provost	

Email this form and attachments to UGPC@fau.edu one week before the UGPC meeting so that materials may be viewed on the UGPC website prior to the meeting.

Master of Science with Major in Ocean Engineering

Degree Requirements
The degree of Master of Science with major in Ocean Engineering will be awarded to candidates who have:

1. Complied with University graduate policies and regulations;

2. Satisfied the University's graduate degree requirements;

3. Satisfactorily completed the appropriate courses of study.

And for the thesis option:
4. Submitted and defended a thesis based on the student's original work in an area of focus.

And for the non-thesis or minor in business options:
4. At the time of application for degree, students must submit a portfolio to their advisor consisting of four graduate projects from courses in their program of study. The portfolio will be reviewed by the student's supervisory committee.

Program Options and Core Course Requirements
Four program options are available to graduate students in Ocean Engineering with either the thesis or non-thesis option. These are shown in a subsequent section.

All graduate students, regardless of option or specialty, must complete the following core courses or must take a satisfactory substitute course of similar content from another university or offer an appropriate substitute consistent with the student's specialty for approval by the supervisory committee by departmental petition.

Mathematical Methods in Ocean Engineering 1*	EOC 5172
Engineering Data Analysis	EOC 6635
Physical Aspects of Oceanography	OCP 6050
In addition, two of the following five courses must be taken:	
Advanced Strength of Materials**	EGM 6533
Special Topics	EOC 6934
Advanced Hydrodynamics 1	EOC 6185
Corrosion 1	EOC 6216C
Engineering Principles of Acoustics	EOC 6317C

* Students with an advanced mathematics competency may obtain exemption upon entrance to the program for Mathematical Methods in Ocean Engineering 1 (EOC 5172) and/or Mathematical Methods in Ocean Engineering 2 (EOC 6174). These students must demonstrate to their advisor, using course descriptions, that the equivalent of five to six courses beyond calculus, including areas such as differential equations, advanced calculus, matrix theory, complex analysis and probability and statistics have been taken. Approval by the graduate programs committee is also required.

** May be substituted with EOC 6934, Special Topics (Theory of Elasticity)

Transfer Credits
A maximum of 9 credits of graduate-level work earned at FAU as an undergraduate or while in non-degree status at FAU and a maximum of 6 credits earned at another recognized institution prior to admission to the Ocean Engineering graduate program may be transferred to a student's degree program subject to the following restrictions:

1. The student must present a transcript identifying the course, in which the student has earned a grade of "B" or better, along with a catalog/course description.

2. The course must not have been counted toward any other graduate or undergraduate degree awarded or to be awarded to the student. An exception exists in the B.S.O.E. to M.S. program where up to 9 credits (5000 level or higher) may be counted for both degrees.

3. The student's advisor and the Ocean and Mechanical Engineering graduate program coordinator, who may seek the advice of other faculty if needed, will decide whether to accept or reject the course credit.

Recency of Credits
No credit earned ten or more years before the degree is awarded may be counted toward a graduate degree.

Course Load
All students choosing the thesis option and receiving financial assistance must be full-time students. This requires that they are registered for a minimum of 9 credits in the fall semester, 9 credits in the spring semester and 6 credits in the summer semester. All international students must be registered as full-time students. A maximum of 12 credits may be taken in a semester. In the graduation semester, the student may be allowed to take 1 credit.

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Supervisory Committee
All graduate students will be assigned an academic advisor who will assist the student in planning a course schedule for the program and will also approve all course selections, schedules and schedule changes.

By the end of the first semester or at the completion of 9 credits, the student, in consultation with the academic advisor, should make the following selections:

1. A particular program option. If selecting a thesis program, then:

a. Chair of the supervisory committee.
b. At least two other members for the supervisory committee.

The chair of the supervisory committee, who is normally the student's advisor, and at least two of the other members must be chosen from the Ocean and Mechanical Engineering faculty. Members from outside the department may be chosen for the supervisory committee with the permission of the department chair. The student should obtain the consent of other members to serve on the supervisory committee. Having obtained this permission, the names of the committee members should be submitted to the department chair. The committee acts as a unit to guide the student's degree program.

Plan of Study
Students choosing the thesis option as part of the M.S. program should, as soon as practical after the selection of a supervisory committee, ~~submit~~ must complete a formal Plan of Study ~~to the committee. The plan must be listed on the form titled "Plan of Study for the Master's Degree (Form 6)" and~~ which will include all course and thesis work that the student expects to complete for the M.S. degree. Students submit their Plans of Study electronically for approval using a system called MyPOS.

The ~~form~~ Plan of Study must be submitted no later than the end of the second semester. Upon approval of the plan, the student will be admitted to candidacy for the M.S. Degree. The student is required to defend his/her thesis proposal before the end of the third semester.

For students electing the non-thesis option, the ~~"Plan of Study for the Master's Degree (Form 6)"~~ Plan of Study must still be completed and submitted ~~approved by the advisor, who will submit the plan~~ to the Graduate College. For both the thesis and non-thesis options, it is required that the admission to candidacy form be completed and submitted at least one semester prior to the semester in which the student expects to graduate.

Fast Track Program
The Department of Ocean and Mechanical Engineering offers an accelerated program option for the Master of Science with major in Ocean Engineering (with thesis) for qualified students who will be supported under research assistantships. The accelerated program allows a student to complete an M.S. degree in 12 months.

The objective of this option is to provide an opportunity for the student to earn a master's degree in one year, which

translates into significant reductions in both time and expense, thus allowing the student to enter the workforce sooner, minimizing the financial impact of pursuing an M.S. degree. In order to achieve this goal, the program of study and thesis work must be well defined prior to the student starting the program of study. In addition to the normal requirements, students with an engineering core GPA of 3.5 or better, in conjunction with their prospective graduate studies academic advisor, are invited to submit a letter of intent to the graduate committee for consideration to be admitted into this program. The letter of intent should include an outline of the project and milestones to be reached by the end of each semester. Students admitted into the accelerated option are allowed to take a maximum of 12 credits per semester.

Doctoral Program

Doctor of Philosophy with Major in Ocean Engineering

Supervisory Committee
In consultation with the student and the advisor, a supervisory committee will be nominated by the department chair, approved by the dean of the College of Engineering and Computer Science and appointed by the Graduate College.

The supervisory committee shall consist of no fewer than four members selected from the Ocean and Mechanical Engineering faculty. Additional members can be from the Ocean and Mechanical Engineering Department, other departments, other universities or from industry.

The committee will include at least one person selected from the faculty from outside the discipline of the student's major. If the student elects or is required to select a minor, this member of the supervisory committee shall represent the discipline selected as the minor.

The supervisory committee should be appointed as soon as possible after the student has passed General Examination 1 and, in general, no later than the end of the second year of equivalent full-time study. Duties of the supervisory committee include:

1. To ensure that the student is aware of all regulations governing the degree. It should be noted, however, that this does not absolve the student of the responsibility of making inquiries regarding the regulations and procedures;

2. To discuss and approve the proposed course of study, dissertation research project and the student's plans for its execution;

3. To conduct and take part in the General Examination 2. No fewer than four faculty members shall be present for the General Examination 2, which must be given on campus;

4. To meet following General Examination 2 to review the research progress, the expected results and make suggestions for completion of the program;

5. To meet on campus when the dissertation is completed and conduct the final oral examination to assure that the dissertation is original research and a contribution to knowledge. No fewer than four faculty members shall be present with the candidate for this examination, but only members of the official supervisory committee are required to sign the dissertation. The supervisory committee must approve the dissertation;

6. To review the student's dissertation carefully. Before signing, each committee member must be sure that it is free of grammatical, editorial or technical errors.

Plan of Study and Admission to Candidacy
Admission to the doctoral program at FAU does not automatically constitute admission to candidacy for the degree. A Plan of Study for the Ph.D. degree ~~(Form 5)~~ must be submitted to the Graduate College before the end of the second semester of enrollment. Students submit their Plans of Study electronically for approval using a system called MyPOS.

The Graduate College will admit a student to candidacy for the Doctor of Philosophy degree after the following conditions have been met:

1. Admission to graduate school to work toward the doctoral degree;

2. Successful completion of the General Examination 1 (Ph.D. Qualifying Exam);

3. Selection of a dissertation faculty advisor and the formation of a supervisory committee;

4. Formulation and submission of a program of study that is approved by the department;

5. Recommendation of the supervisory committee and department chair.

Note: Students may not enroll for Ph.D. dissertation credits (EOC 7980) until they have been admitted to candidacy.

Following the successful completion of General Examination 1, the student must complete and submit the form "Admission to Candidacy for the Doctoral Degree (Form 8)." General Examination 1 and submission of admission to candidacy form should be completed at least two semesters before the beginning of the semester in which the degree is to be conferred. A student not admitted to candidacy before the beginning of the fourth academic year of graduate work at the University must petition through the College to the Graduate College for permission to register for additional work.

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Coursework and Research
The work for the Ph.D. degree must consist of research and advanced studies in ocean engineering. The student who previously obtained a master's degree will be required to complete a total of 54 credits of course and dissertation work for the Ph.D. At least 18 of the credits must be taken from the Ocean Engineering list of courses and all core course requirements must be satisfied. A minimum of 33 credits of doctoral dissertation research will be required. No more than 39 dissertation credits may be counted toward the 54-credit requirement. The remaining credits may be selected from the listing of OE courses, advanced mathematics courses, elective courses, directed independent study (DIS) or dissertation. A minimum of 9 credits of graduate-level mathematics must be satisfied.

B.S. to Ph.D. Program
A student with outstanding scholastic achievement who holds only a baccalaureate degree (B.S.) may be admitted directly to the Ph.D. program in Ocean Engineering. The student with a B.S. will be required to complete a total of 84 credits of course and dissertation work for the Ph.D. At least 18 of the credits must be taken from the Ocean Engineering list of courses, and all core course requirements must be satisfied. A minimum of 33 credits of doctoral dissertation research will be required. No more than 39 dissertation credits may be counted toward the 84-credit requirement. The remaining credits may be selected from the listing of OE courses, advanced mathematics courses, elective courses, directed independent study (DIS) or dissertation. A minimum of 9 credits of graduate-level mathematics must be satisfied.

General Examination 1
After the completion of three Ocean Engineering core courses and three elective courses, the student will be required to take a General Examination 1, or Ph.D. Qualifying Exam. The primary purpose of General Examination 1 is to evaluate the student's ability, not only to demonstrate a thorough knowledge of Ocean Engineering course material, but to evaluate original thinking. The written examination will be in three parts: One covering the core courses, one covering elective subjects and one is a review and analysis of a research paper. The exam on the three core courses will be four hours in duration and will require four problems to be answered. The electives exam will be a three-hour exam and will require one problem from each elective to be answered. The research paper exam will be a two-day take home exam requiring the student to answer questions on a specific research paper. A new set of examinations will be prepared and questions and problems from previous examinations are not available to students. It is expected that the examination on the elective courses will focus on the student's area of specialization.

An overall grade of 70 percent on each and every part of the written examination is passing. Students who score below 70 percent on certain parts of the written examination are given the option of re-taking exams on areas in which they scored less than 70 percent before the beginning of the next semester. The student must score 70 percent in each subject that is retaken. Alternatively the student may retake the entire exam when it is next offered. There would only be one opportunity to retake all or part of the exam. General Examination 1 is scheduled immediately after the last day of the final examination period in the fall semester and in the spring semester each year.

For students who have obtained the M.S. in Ocean Engineering at FAU, General Examination 1 must be taken no later than the beginning of the third semester of Ph.D. study or at the first opportunity it is offered thereafter. Those admitted to the Ph.D. program directly after the B.S. degree in Ocean Engineering at FAU may take the examination after completing 24 credits of graduate coursework. For students not so previously enrolled, the exam must be taken by the beginning of the fourth semester or as soon as it is offered thereafter.

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General Examination 2

At an appropriate point in the student's graduate studies, normally within 12 months of passing General Examination 1, the student must complete General Examination 2. This is the dissertation proposal defense, in which students defend the choice of a dissertation topic and answer questions on fundamental issues related to their research. The student must have passed General Examination 1, selected the dissertation topic, formed a supervisory committee and completed a literature survey prior to the dissertation proposal defense.

In General Examination 2, the student should be prepared to demonstrate the ability to perform research on a topic approved by the supervisory committee by presenting a comprehensive literature survey combined with a critical analysis of the state of the art in the particular field. While this examination will be centered around the particular research area, it will not necessarily be limited to that subject. If unsuccessful in the examination, the student may, at the discretion of the department, either remain in the doctoral program and retake the examination at a later date or withdraw from the program. No more than two attempts will be permitted.

Mechanical Engineering

Master's Programs

The Master of Science program has both thesis and non-thesis options. The thesis option requires a minimum of 24 credits of coursework and a thesis (6 additional credits). The non-thesis option requires a minimum of 33 credits of coursework. Requirements for the Ph.D. program are described later in this section.

Each student must complete a comprehensive and coordinated Plan of Study requiring depth in one or more of the following areas: mechanical systems, solid body mechanics, fluid mechanics, heat transfer, thermal/fluid systems, helicopter dynamics, materials, manufacturing, controls, robotics and CAD/CAM. The Plan of Study will include all course and thesis work (if thesis option), that the student expects to complete for the M.S. degree. Students submit their Plans of Study electronically for approval using a system called MyPOS.

Admission Requirements
Usual admission requirements are as follows. Students with non-engineering bachelor's degrees, click here for additional requirements.

1. A baccalaureate degree in Engineering, Natural Science or Mathematics, but preferably in Mechanical Engineering and from a regionally accredited institution. A student who does not have a background in mechanical engineering should expect to take additional undergraduate mechanical engineering coursework.

2. Demonstrated proficiency in both written and spoken English. A student from a non-English-speaking country is required to take the Test of English as a Foreign Language (TOEFL) exam and achieve a score of at least 550 (CBT-213, iBT-79).

3. At least a 3.0 (of a 4.0 maximum) GPA in the last 60 credits attempted prior to graduation.

4. A score of 145 or higher on the verbal and 150 or higher on the quantitative portions of the Graduate Record Examination (GRE) or a combined score of 1000 or higher on the verbal and quantitative portions of the GRE taken prior to fall 2011. GRE scores more than five years old will not be accepted.

5. Petitions for admittance to the program will not be accepted when a student wishes to include more than five courses taken as a non-degree-seeking student.

Admission to Candidacy
A student is eligible to apply for candidacy when:

1. The student has completed a minimum of 9 credits as a graduate student.

2. The student has maintained a minimum GPA of 3.0 in all courses attempted as a graduate student.

3. The student has filed an approved Plan of Study for the degree program.

Students should file for candidacy as soon as they are eligible. Usually, no more than 20 credits of completed work before admission to candidacy will be accepted toward a degree program. A student should be admitted to candidacy prior to beginning work on thesis.

Degree Requirements
Students must satisfy all of the University graduate requirements.

Doctoral Program

Doctor of Philosophy with Major in Mechanical Engineering

The degree of Doctor of Philosophy with major in Mechanical Engineering is conferred by the University primarily in recognition of a demonstrated ability for independent and original research in the discipline. This ability must be

supported by a comprehensive and coordinated plan of advanced study designed to provide a strong background in the fundamentals of mechanical engineering and related areas.

Admission Requirements
Minimum requirements for admission to doctoral studies in mechanical engineering are as follows:

1. A baccalaureate in engineering or a related field from a recognized institution;

2. An average of "B" or better in the last 60 credits of work attempted;

3. A score of 145 or higher on the verbal and 150 or higher on the quantitative portions of the Graduate Record Examination (GRE) or a combined score of 1000 or higher on the verbal and quantitative portions of the GRE taken prior to fall 2011. GRE scores more than five years old will not be accepted;

4. Demonstrated proficiency in both written and spoken English. A student from a non-English-speaking country is required to take the test of English as a Foreign Language (TOEFL) and achieve a score of at least 550 (CBT-213, iBT-79);

5. Three letters of reference attesting to the student's potential for graduate studies in mechanical engineering;

6. Approval for admission by the Department of Ocean and Mechanical Engineering. Usually, an applicant admitted will have a strong record of achievement that exceeds the minimum requirements. It is anticipated almost every applicant will already have a master's degree, but it is not an absolute requirement. Approval for admission by the department will be based on an evaluation of the student's record in terms of likelihood of success in the Ph.D. program.

Admission to doctoral studies does not constitute admission to candidacy for the degree.

Admission to Doctoral Status
Admission to doctoral status is granted after students have:

1. Successfully completed General Examination 1;

2. Been accepted by a department faculty member willing to serve as their dissertation advisor;

3. Had their ~~plan of coursework~~ Plan of Study approved by their advisor, by the department graduate coordinator and by the Graduate College.

A Plan of Study for the PhD degree must be submitted to the Graduate College before the end of the second semester of enrollment. Students submit their Plans of Study electronically using a system called MyPOS.

Admission to Candidacy
Admission to candidacy requires formulation of a supervisory committee approved by the department graduate coordinator as well as successful completion of General Examination 1.

Degree Requirements
A central requirement for the Ph.D. degree in Mechanical Engineering is submission and defense of a dissertation based upon original research in an area of focus acceptable to the student's supervisory committee. The completed dissertation must be approved by the committee, the department chair and the Graduate College. Additional requirements are:

1. A minimum of 51 credits of coursework beyond the baccalaureate degree, or 21 credits beyond the master of science degree;

2. No more than 3 credits of directed independent study may be used to satisfy the minimum 21 credits of coursework;

3. A minimum of 12 credits must be in Mechanical Engineering courses, including two of the following three core courses. In addition a graduate-level Engineering Mathematics course is required, which may include, but not limited to, EOC 5172, Mathematical Methods in Ocean Engineering 1 or PHZ 5115, Mathematical Physics.

Core courses (select two of the following three courses)		
Advanced Strength of Materials	EGM 6533	3
Advanced Fluid Dynamics	EML 6726	3
Mechanical Vibrations	EML 6223 **or**	3
Advanced Control Systems	EML 6317	3
Mathematics		
One Engineering Mathematics course, graduate level		

4. Doctoral thesis research of not less than 33 credits;

5. Successful completion of General Examination 1;

6. Successful completion of General Examination 2;

7. Submitted and defended a dissertation based on original research in the student's area of specialization. The supervisory committee, the department chair and the Graduate College must have approved the dissertation;

8. Satisfaction of all University regulations and requirements for the Ph.D. degree;

9. **General Examination 1:** After the completion of three Mechanical Engineering core courses and two elective courses, the student will be required to take a General Examination 1, or Ph.D. Qualifying Exam. The primary purpose of General Examination 1 is to evaluate the student's ability, not only to demonstrate a thorough knowledge of Mechanical Engineering course material, but to evaluate original thinking. The written examination will be in four parts: One covering the two core courses and an elective treated as a core course, one covering other elective subjects, one covering Mathematics and one is a review and analysis of a research paper. The exam on the two core courses and the elective core course will be three hours in duration and will require three problems to be answered. The electives exam will be a one-hour exam and will require one problem from two elective courses to be answered. The exam on Engineering Mathematics will be a two-hour exam and the student must answer two problems. The research paper exam will be a two-day take home exam requiring the student to answer questions on a specific research paper. A new set of examinations will be prepared and questions and problems from previous examinations are not available to students. It is expected that the examination on the elective courses will focus on the student's area of specialization;

An overall grade of 70 percent on each and every part of the written examination is passing. Students who score below 70 percent on certain parts of the written examination are given the option of re-taking exams on areas in which they scored less than 70 percent before the beginning of the next semester. The student must score 70 percent in each subject that is retaken. Alternatively the student may retake the entire exam when it is next offered. There would only be one opportunity to retake all or part of the exam. General Examination 1 is scheduled immediately after the last day of the final examination period in the fall semester and in the spring semester each year.

10. For students who have obtained the M.S. in Mechanical Engineering at FAU, General Examination 1 must be taken no later than the beginning of the third semester of Ph.D. study or at the first opportunity it is offered thereafter. Those admitted to the Ph.D. program directly after the B.S. degree may take the examination after completing 24 credits of graduate coursework. For students not so previously enrolled, the exam must be taken by the beginning of the fourth semester or as soon as it is offered thereafter;

11. **General Examination 2:** At an appropriate point in the student's graduate studies, normally within 12 months of passing General Exam 1, the student must complete General Examination 2. This is the dissertation proposal defense, in which students defend the choice of a dissertation topic and answer a series of questions on fundamental issues related to their research topic. Students must have passed General Examination 1, selected the dissertation topic, formed a supervisory committee and completed a literature survey prior to the dissertation proposal defense;

In General Examination 2, students should be prepared to demonstrate the ability to perform research on a topic

approved by the supervisory committee by presenting a comprehensive literature survey combined with a critical analysis of the state of the art in the particular field. While this examination will be centered around the particular research area, it will not necessarily be limited to that subject. If unsuccessful in the examination, the student may, at the discretion of the department, either remain in the doctoral program and retake the examination at a later date or withdraw from the program. No more than two attempts will be permitted.

Transfer Credits
A maximum of 6 credits beyond the master's degree can be transferred into the student's program of study.

Time Limits
No credit that is more than 10 years old at the time a graduate degree is awarded may be counted toward that degree at Florida Atlantic University. In addition, the final examination must be completed within five calendar years of the admission to candidacy, otherwise the Qualifying Examination must be repeated.

Residency Requirement
Students are required to spend two semesters of full-time study beyond the master's degree in residence at Florida Atlantic University.

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